

Appl. No.: 10/599,042

Amdt. Dated: January 11, 2008

Reply to Office Action Mailed: October 11, 2007

LISTING OF CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

1. (Currently Amended) Method for operating a magnetohydrodynamic pump [[(5)]] for a liquid-metal anode [[(1)]] of an X-ray source, wherein [[it]] the magnetohydrodynamic pump is configured to be operated in at least two modes, the method comprising:

wherein the in a first mode is a thawing mode, in which the melting liquid metal [[(2)]] is melted in a line [[(3)]] of the liquid-metal anode [[(1).]], and

in a [[the]] second mode is an operating mode, in which the pumping the liquid metal (2) is pumped through the line [[(3)]] and producing X-ray beams are produced,

characterized in that wherein in the first thawing mode, the engine of the pump [[(5)]] is constantly switched on and off in turn.

2. (Currently Amended) Method according to claim 1, characterized in that wherein, in the thawing mode, a sensor records whether the liquid state of the liquid metal [[(2)]] has been reached.

3. (Currently Amended) Method according to claim 1, characterized in that further comprising there is a third, start-up mode between the first thawing mode and the second operating mode, in which the rotation speed of the pump [[(5)]] is increased.

4. (Currently Amended) Method according to claim 3, characterized in that wherein the rotation speed of the pump [[(5)]] is increased until the liquid metal [[(2)]] displays its normal flow rate.

5. (Currently Amended) Method according to claim 1, characterized in that further comprising, after the operating mode, there is a fourth, run-down mode in which the rotation speed of the pump [[(5)]] is reduced stepwise after X-ray beams have been produced.

6. (Currently Amended) Method according to claim 5, characterized in that wherein the stepwise reduction of the rotation speed of the pump (5) does not take place until the occurs

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when a temperature of [[the]] a region of focus [[(4)]] falls below a predetermined predetermined threshold value.

7. (Currently Amended) Method according to claim 6, characterized in that wherein the predetermined threshold value is 50°C above the melting point of the liquid metal [[(2)]].

8. (Currently Amended) Liquid-metal A liquid-metal anode [[(1)]] for an X-ray source with a liquid metal [[(2)]] which is located in a line [[(3)]], the liquid-metal anode comprising:
wherein an anode module (15) is inserted into the line [[(3)]] in [[the]] a region of focus [[(4)]], with a pump [[(5)]] for circulating the liquid metal [[(2)]] in the line [[(3)]] and with a cooling system [[(6)]] for the liquid metal [[(2),]]; and

characterized in that an electron window (8) is inserted into the anode module [[(15)]].
[[and]]

wherein the pump (5) can is configured to be operated as a magnetohydrodynamic pump [[(5)]] by a method according to the method of claim 1 one of the previous claims.

9. (Currently Amended) Liquid-metal anode [[(1)]] according to claim 8, characterized in that wherein a Bi alloy, in particular BiPb or BiPbInSn, is used as liquid metal [[(2)]].

10. (Currently Amended) Liquid-metal anode [[(1)]] according to claim 9, characterized in that wherein the percentage by weight of Bi in the BiPb alloy is between 50 and 60 wt.%, in particular 55.5 wt.%, and the remainder is Pb.

11. (Currently Amended) Liquid-metal anode [[(1)]] according to claim 9, characterized in that wherein the BiPb alloy contains 49.4 wt.% Bi, 18.8 wt.% Pb, 21.0 wt.% In and 11.6 wt.% Sn.

12. (Currently Amended) Liquid-metal anode [[(1)]] according to claim 8, characterized in that wherein the line [[(3)]] is made of molybdenum.

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13. (Currently Amended) Liquid-metal anode [[(1)]] according to claim 8, characterized in that wherein the anode module [[(15)]] is made completely of molybdenum into which an electron window [[(8)]] is inserted which consists of light-permeable cubic boron nitride.
14. (Currently Amended) Liquid-metal anode [[(1)]] according to claim 8, characterized in that wherein the electron window (8) is 10 - 80 μ m, in particular 40 μ m, thick.
15. (Currently Amended) Liquid-metal anode [[(1)]] according to claim 8, characterized in that wherein the cooling system [[(6)]] is a minichannel cross-flow heat exchanger.
16. (Cancelled)